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10/647,353	08/26/2003	Tatsuya Igarashi	Q77194	3498

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Washington, DC 20037

EXAMINER
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YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/647,353

Applicant(s)

IGARASHI, TATSUYA

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2003 and 25 March 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-23 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 09/695,978.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date rec'd 26 Aug 2003 and 25 Mar 2005.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

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1. Claims 4-9 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4: The scope of a “pyradine-triyl” as recited in claim 4 is unknown. In view of page 16, lines 2-7, of the specification, perhaps “pyradine-triyl” should read --pyrazine-triyl--.

Claims 5-8: It is not clear if claims 5-8 require the heteroarene-triyl represented by Ar to be substituted, or if these claims are merely further defining the optional substituent for Ar.

Claims 9 and 14: The Markush group set forth in claim 9 is inconsistent with the limitations of claim 1 in allowing the “at least one of Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup>” to represent a phenylene group. A phenylene group is not a fused arylene group. Similarly, the requirements for Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup> as set forth in claim 14 are inconsistent and confusing in first reciting that each of these variables represents a fused arylene group, followed by a Markush group which allows at least one of these variables to represent a phenylene group.

2. Regarding claim interpretation:

References to “arylene” groups are interpreted as encompassing “aryl” groups where one of the two variables attached to the “arylene” group may be a hydrogen atom (e.g. when Ar<sup>12</sup> in formula (1) represents a hydrogen atom, Ar<sup>11</sup> actually represents an aryl group rather than an arylene group).

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3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-9, 14 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Shi et al. (US 5,935,721).

See the second and third formulae in columns 23-24, the first formula in c. 25-26 and the first formula in c. 27-28.

The prior art compounds represented by these formulae are compounds represented by formula (1) as defined in present independent claims 1-3 and various claims dependent therefrom wherein two of Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup> each represent a phenyl group, the corresponding two of Ar<sup>12</sup>, Ar<sup>22</sup> and Ar<sup>32</sup> each represent hydrogen, one of Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup> represents a naphthylene group, and the corresponding one of Ar<sup>12</sup>, Ar<sup>22</sup> and Ar<sup>32</sup> represents an aryl group. The prior art compounds are disclosed for use in an organic layer of a light emitting device having the structure required by the present claims.

Each of the prior art compounds represented by the formulae referenced above meets the limitations of the compound required by present claims 1-3, 9 and 20-22.

Each of the prior art compounds represented by the formulae referenced above also meets the limitations of the compound required by present claim 14 if two of Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup> may represent phenyl(ene) groups instead of fused aryl(ene) groups.

The prior art compound represented by the second formula in c. 23-24 wherein X=S further meets the limitations of the compound required by present claim 4 wherein Ar is a thiophene-triyl.

The prior art compound represented by the third formula in c. 23-24 further meets the limitations of the compound required by present claim 4 wherein Ar is a triazine-triyl.

The prior art compounds represented by the third formula in c. 23-24 and the first formula in c. 25-26 meet the limitations of the compound required by present claims 5-8 if claims 5-8 are merely further defining an optional substituent. (If claims 5-8 are instead interpreted as requiring Ar to have the recited substituent group, then these two prior art compounds do not meet the limitations of the compound required by these claims because triazine-triyl and triazole-triyl have no substitution positions available beyond the three filled by Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup>).

The prior art compounds represented by the second formula in c. 23-24 meet the limitations of the compound required by present claim 5-7 regardless of whether these claims define a requirement or an option. These prior art compounds are compounds of present formula (1) wherein Ar is substituted by a substituent group that is an aryl group.

The prior art compound represented by the first formula in c. 27-28 meets the limitations of the compound required by present claims 5-8 regardless of whether these claims define a

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requirement or an option. This compound is a compound of present formula (1) wherein Ar is substituted by a substituent group that is hydrogen.

5. Claims 1-10 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Bock et al. (US 6,437,123 B1).

See the whole patent. In particular, see column 1, lines 3-8, c. 1, l. 43-c. 2, l. 62, the formula in c. 6, and c. 8, l. 55-66.

The compounds represented by the formula in c. 6 are compounds represented by formula (1) as defined in present claims 1-4, 9, 10 and 14, and are disclosed for use in a light emitting device having the structure required by the present claims.

These prior art compounds also meet the limitations of the compound required by present claims 5-8 if claims 5-8 are merely further defining an optional substituent. (If claims 5-8 are instead interpreted as requiring Ar to have the recited substituent group, then these prior art compounds do not meet the limitations of the compound required by these claims because triazine-triyl has no substitution positions available beyond the three filled by Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup>).

6. Claims 1-10, 14-16 and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Kita et al. (US 6,656,608 B1).

See the formulae for prior art compounds A-17, B-7 through B-9, C-8 and F-3 in columns 27, 33, 38 and 46.

The prior art compounds represented by these formulae are compounds represented by formula (1) as defined in present independent claims 1-3 and various claims dependent therefrom. The prior art compounds are disclosed for use in an organic layer of a light emitting device having the structure required by the present claims.

Each of the prior art compounds represented by the formulae referenced above meets the limitations of the compound required by present claims 1-3 and 9.

Prior art compound C-8 further meets the limitations of the compound required by present claim 4 wherein Ar is a triazine-triyl, and the limitations of the compound required by present claims 10, 14-16 and 20-22.

Prior art compounds A-17, B-7 through B-9 and C-8 meet the limitations of the compound required by present claims 5-8 if claims 5-8 are merely further defining an optional substituent. (If claims 5-8 are instead interpreted as requiring Ar to have the recited substituent group, then these prior art compounds do not meet the limitations of the compound required by these claims because triazine-triyl and triazole-triyl have no substitution positions available beyond the three filled by Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup>).

Prior art compound F-3 meets the limitations of the compound required by present claim 5-8 regardless of whether these claims define a requirement or an option. These prior art compounds are compounds of present formula (1) wherein Ar is substituted by a substituent group that is hydrogen.

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Prior art compounds A-17, B-7 through B-9 and F-3 also meet the limitations of the compound required by present claim 14 if at least one of Ar<sup>11</sup>, Ar<sup>21</sup> and Ar<sup>31</sup> may represent phenyl(ene) groups instead of fused aryl(ene) groups.

Prior art compounds B-7 and B-9 further meet the limitations of the compound required by present claim 20.

Prior art compound B-8 further meets the limitations of the compound required by present claims 20-22.

Prior art compound F-3 further meets the limitations of the compound required by present claims 20 and 21.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11-13, 17-19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (US 6,656,608 B1) as applied above to claims 1-10, 14-16 and 20-22, and for the further reasons set forth below.

Kita et al. do not disclose a specific example of a compound meeting the limitations of the compound required by present claims 11-13 and 17-19, but such compounds would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention given



Kita's disclosure as a whole, and the disclosure in c. 11-12 in particular. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make other compounds suggested by Kita and similar to specific compounds disclosed by Kita with the expectation that such compounds would have similar properties and could be used in a light emitting device as taught by Kita.

Given Kita's disclosure in c. 11-12, one of ordinary skill in the art would have reasonably expected that triazine compounds similar to C-8 but having a fused ring group having a phenanthrene structure or having four or more fused rings would be suitable for use in Kita's light emitting devices. The third and fourth formulae shown in c. 12 are groups comprising one phenanthrene structure, and the fifth formula shown in c. 12 is a group comprising two phenanthrene structures. These groups are disclosed as suitable for the same purpose as a binaphthyl group. Kita also teaches that the groups shown in c. 11-12 may be further substituted, and may form a condensed ring. One of ordinary skill in the art at the time of the invention would have reasonably expected that replacing one or more of the binaphthyl groups in C-8 with, for example, a group represented by the fifth formula in c. 12, would provide compounds suitable for Kita's purposes. A compound having a triazine group substituted with three of the groups represented by the fifth formula in c. 12 meets the limitations of a compound as required by present claims 11 and 17. Further, given Kita's disclosure of groups having three condensed rings and the teaching of further substitution which may form a condensed ring, one of ordinary skill in the art would have reasonably expected compounds having substituents comprising four condensed rings to be suitable for Kita's purposes.

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9. The present application claims priority of two foreign applications, one of which was filed prior to the U.S. filing date of the patent to Kita et al. Applicant cannot rely upon the foreign priority papers to overcome the rejection based on the Kita patent because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

10. If claim 5 is merely further defining the optional substituent for Ar, then Applicant is advised that should claim 2 be found allowable, claim 5 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

11. Miscellaneous: In claim 4, "thiophen-triyl" should read --thiophene-triyl--.

12. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
April 12, 2005



MARIE YAMNITZKY  
PRIMARY EXAMINER

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